

ABSTRACT

A positioning data calculating procedure calculates analytically relative rotation angles for the links arranged in series to form an articulated manipulator to locate an object in a desired orientation at a desired position. Coordinate expressions including an x-coordinate expression representing the x-coordinate of a triaxial intersection point, a yz addition coordinate expression representing the sum of the y- and the z-coordinate of the triaxial intersection point, and a yz subtraction coordinate expression representing the remainder of subtraction of the z-coordinate from the y-coordinate of the triaxial intersection point, and including first to third rotation angles corresponding to rotation angles through which the second link is turned relative to the first link, through which the third link is turned relative to the second link, and through which the fourth link is turned relative to the third link as variables are solved. The first to the third rotation angles can easily and analytically be determined by using the yz addition coordinate expression and the yz subtraction coordinate expression. Fourth to sixth angles can analytically be determined on the basis of the first to the third rotation angle. The determination of the first to the sixth rotation angle by an analytical operation needs a time shorter than that needed by the determination of the same by a convergence operation.